The Effectiveness of Alcohol Advertisement Bans: A Critical Review

I. Introduction

In most developed countries, alcohol consumption is an unavoidable fact. Be it young adults drinking recreationally with friends, or elderly people having a bottle of wine at dinner, almost everyone drinks on occasion. However, excessive drinking can result in alcoholism and is associated with many serious health concerns. To curb these negative effects, many governments have strict regulations in place regarding where alcohol can be sold, who can consume it, and the time and place where it can be consumed. To induce an ideal level of alcohol consumption, policymakers can institute laws regarding minimum legal drinking ages (MLDA), private or public models of alcohol wholesale, taxation of alcohol sales, and many other factors.

One such factor is the regulation of alcohol advertisements, determining when and where an ad for an alcoholic beverage can be shown. This seems intuitive; the very idea of marketing suggests that if people do not see ads for a product, they will be less likely to buy it. However, with alcohol being as culturally ubiquitous as it is, this effect may not be that straightforward. While an ad may sway someone's decision to buy one brand of beer over another, it may not have any sway over whether that person will ultimately drink or not. To this end, many economic studies have been conducted to investigate the effectiveness of alcohol ad bans.

The results of these studies could have important policy implications; if ad bans are shown to be consistently effective, then it would be a good investment of resources to continue their implementation. If they are ultimately shown to have little effect, then governments can be confident in a decision to focus their efforts on alcohol regulation in other areas of control.

In this paper, I review three observational studies that investigate the effectiveness of alcohol advertisement bans, with the purpose of answering the research question: *are advertisement bans an effective way of regulating alcohol consumption*? The first two studies use a cross-country approach, analysing data from many countries in the Organization for Economic Co-operation and Development (OECD). The third paper is a more focused look at the United States, observing how alcohol control policies differ by state. Finally, I will evaluate the findings of all three studies and present a synthesized conclusion on the effectiveness of alcohol advertisement bans.

II. Articles

i. Nelson, J. P. (2010). Alcohol Advertising Bans, Consumption and Control Policies in Seventeen OECD Countries, 1975-2000

This paper explores the effect of alcohol advertising bans and other control policies. Specifically, it asks the question of how significantly alcohol consumption is impacted by policies that restrict broadcast (television or radio) advertisements of alcoholic beverages. Moreover, it aims to test the null hypothesis that these advertising bans do not have a negative effect on alcohol consumption.

The paper employs an observational approach to its analysis, using panel data sourced from the OECD's online *Global Alcohol Database,* which contains data regarding the alcohol expenditure and consumption of each of its member countries on a per-year basis. Data on real gross domestic product (GDP) per capita as a measure of individual income, are from the *Penn World* online resource. Alcohol price data are from the OECD *National Accounts: Detailed Tables.* Wine sentiment data are from the World Health Organization (WHO). Unemployment rate data are from the OECD *Labour Force Statistics*. Tourism rate data are from World Tourism, *Yearbook.* Tobacco ban data are from Health New Zealand. Healthcare expenditure data are from the OECD. Control index data from Karlsson and Osterberg (2001) with additions from the author. The control index is a parameter from 0 - 20 covering six major policy categories and 14 subcategories of alcohol controls, including those on production and wholesale, marketing, national education and prevention programs, and others. A higher value indicates stricter control.

The study analyses data from the period of 1960 - 2000 in the countries of Australia, Austria, Belgium, Canada, Denmark, Ireland, Netherlands, New Zealand, the United Kingdom, the United States of America, Finland, Norway, Sweden, France, Italy, Portugal, Spain. In total, the sample size is 442 observations.

The data are analyzed using multivariate regression through the model:

$$A_{it} = \alpha + R_{it}\beta + \eta C_{it} + X_{it}\gamma + \delta_t + \varepsilon_{it}$$

where subscripts i and t denote country and year respectively; A is the natural log of mean alcohol consumption per capita in litres; R is a vector of dummy variable for the presence of partial and total broadcast advertising bans; C is the alcohol control index; η is the control coefficient; X is a vector of regressors that control for other economic and demographic variables that affect consumption (price, income, aging population, wine sentiment, unemployment rate, tourism rate, healthcare expenditure, presence of tobacco advertising bans and an economic openness index); α is the overall intercept term; δ is a period-specific effect; β and γ are coefficient vectors; and ϵ is a stochastic disturbance term.

The regression models are estimated through wighted generalized least-squares (GLS) and unweighed ordinary least-squares (OLS), as well as instrumental variable (IV) estimates for the control index, which are used in IV-GLS regressions for alcohol demand.

Using OLS estimates, the study finds that a ban on spirits advertisements results in an increase of 0.114 in yearly log litres alcohol consumption per capita, and a total ad ban results in an increase of 0.087. An increase of 1 unit in the control index, however, results in a -0.043 decrease.

Using GLS estimates, a ban on spirits ads results in an increase of 0.027, and a total ad ban results in an increase of 0.071. In this estimation, an increase in the control index results in a -0.026 decrease.

Using a GLS estimate with the control index as an IV, a ban on spirits ads results in an increase of 0.048, and a total ad ban results in an increase of 0.086. In this estimation, the control index IV has the effect of a decrease of -0.041. All of the results discussed are statistically significant at the 95% confidence level in a two-tailed test.

Overall, these results suggest that advertising bans do not achieve the intended effect of lowering alcohol consumption, and in fact seem to increase alcohol consumption in most cases. Therefore, this suggests that alcohol advertising bans are not an effective policy. However, it is important to note that other control policies included in the control index *do* consistently have a negative effect on alcohol consumption. Therefore, this indicates that if policymakers want to decrease alcohol consumption, they should focus on other aspects of alcohol control such as higher legal drinking age or lower blood alcohol content (BAC) limits.

An internal strength of this paper is the comprehensiveness of the control index. By taking into account the vast array of variation in each country's regulations of alcohol, the effect of advertising bans is more specifically defined. Furthermore, this allows the paper to come to a confident conclusion that advertisement bans not only have an overall insignificant effect on total consumption, but also that other control methods are much *more* effective than ad bans. Additionally, the study includes a regression done without the control index to imitate models done in previous studies. Without the control index, ad bans *appear* to have a negative effect on drinking, which further strengthens the paper's conclusions when additional explanatory variables are included.

One internal weakness is the absence of a robustness test for the estimation model. While it is unclear what bias this may cause, it is nevertheless worth mentioning that the model's assumptions may not hold up.

An external strength of the paper is the significant lengths to which it goes to control for the unique characteristics of the countries examined. The inclusion of alcohol culture explanatory variables, the cross-country approach with many different populations observed, as well as robust consideration of other alcohol control laws in the control index make this study widely applicable to other populations of similar culture. For example, Eastern European countries such as Poland would likely follow the same trends due to the paper's external strengths.

However, a weakness arises when one considers how these conclusions can be extrapolated to today's advertising landscape, specifically with the inclusion presence of online advertisements. With the freedom with which any internet user can access any site (for example, children lying about their age to access age-restricted content) there is a host of unknowns concerning how effective alcohol ads are on the internet are compared to print and broadcast. Given the possibility that online ads are more effective than in other media, the paper's bias could underestimate the effectiveness of comprehensive ad bans, since a "comprehensive" ad ban today would almost definitely need to account for online ads.

Another external weakness is the bias towards first world countries. Though the paper surveyed many countries, all of these are wealthy and developed nations, leaving a gap in the paper's extrapolation potential towards third world countries like Ethiopia. Public attitudes

towards advertisement and government regulation may vary greatly in a less developed country, and this would cause the effectiveness of an advertising ban to differ from the results seen in this study. With less ubiquitous media culture in third world nations, it can be hypothesized that drinking is even less directly related to advertising, therefore this study may overestimate the effect of an ad ban if one were to be implemented in one of these countries.

ii. Saffer, H., & Dave, D. (2002). Alcohol Consumption and Alcohol Advertising Bans

This paper explores the relationship between alcohol advertising bans and alcohol consumption, and seeks to answer the question of whether ad bans decrease consumption. Furthermore, the study also asks how national attitudes on drinking and current alcohol consumption affect the probability that ad bans will be implemented in the future. Although no null hypothesis is given, the paper notes that most prior studies have found no effect of advertising on total alcohol consumption.

The paper utilizes an observational time series of cross-sectional data. Total alcohol consumption data are from the Brewers Association of Canada. Total alcohol expenditure data as well as real income data are from the OCED *National Accounts*. Beer production data are from the United Nations *Industrial Commodity Statistics Yearbooks*, wine production data from the United Nations *Food and Agricultural Organization Production Yearbooks*. Cigarette advertising ban data are from Health New Zealand and World Health Organization. Government health expenditure data as well as general GDP data are from the OCED *Health Data*.

The study analyses data from the period of 1970 - 1995 in the countries of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, the United Kingdom, the United States of America. In total, the sample size is 431 observations.

The data are analyzed through a two equation structural model with Two Stage Least Squares (TSLS) estimator. The first equation measures alcohol demand; since there is no specific regression equation included in the study, I have constructed one from the explanatory variables:

$$A_{it} = \beta_1 + \beta_2 Z_{it} + \beta_3 I_{it} + \beta_4 C_{it} + \beta_5 P_{it}$$

Where *A* is the natural log of pure alcohol consumption per capita in litres; subscripts *i* and *t* denote country and year respectively; *I* is real income in 1990-deflated thousands of United States dollars; *C* is alcohol culture (beer and wine consumption as a fraction of total alcohol consumption); and *Z* is the presence of either partial or total alcohol advertising bans. A partial advertising ban is defined as covering spirits, or covering wine and beer in a given media form (television, radio, and print). With three media types and two beverage types, this variable is a

number between 0 and 6. A total advertising ban is defined as a ban of all alcohol ads in any of the three media forms. This variable is a number between 0 and 3.

The second equation assumes that the legislation of alcohol ad bans is a function of public attitudes about alcohol. Again, in the absence of specific regression equations I have constructed my own:

$$Z_{it} = \beta_1 + \beta_2 A_{it} + \beta_3 C_{iT} + \beta_4 T_{it} + \beta_5 E_{it} + \beta_6 W_{it} + \beta_7 G_{it} + \beta_8 H_{it}$$

Where *Z* is number of either partial or total ad bans as defined above; *A* is alcohol consumption as defined above; *C* is alcohol culture as defined above; *T* is the presence of cigarette ad bans; *E* is beer production in hectolitres per capita; *W* is wine production in hectolitres per capita, *G* is government spending as a percentage of total GDP; and *H* is public health expenditure as a percentage of total health expenditure.

In the TSLS estimates, the results are somewhat hard to interpret. When country-specific dummy variables are excluded, a partial advertising ban is shown to reduce alcohol consumption by -0.0486 log litres per capita, but when country dummy variables are included this changes to an increase of 0.0367. A total advertising ban similarly has a negative effect of -0.0898 per capita when country dummies are excluded, but when they are included this changes to a positive effect of 0.0367. Furthermore, the *R*-square values for the regressions with country dummies included is much higher than for when they are excluded (0.68-0.70 vs. 0.946). These are significant at the 10% level.

Looking at the other dependent variable of likelihood of ad bans being enacted, the paper notes that the only significant variable related to the enactment of partial bans is government spending as a share of total GDP. Alcohol consumption has a positive coefficient as well, but these results are only significant at the 80% level. In regards to the enactment of total bans, the paper states that higher alcohol consumption is shown to have a significant positive effect on total advertising bans, with a coefficient of 1.4888.

The paper concludes that alcohol consumption is negatively affected by partial and total alcohol advertising bans. The policy implications of this would be that advertising bans are a

good investment of resources, and are effective at reducing the negative effects of excessive drinking on a population's health.

An internal weakness of this paper's conclusions is the lack of a specific regression model. The paper does not describe the mechanics of how the explanatory variables are used to compute the regression results, and the vague form in which the models are expressed leaves a lot to be desired. Another internal weakness is the lack of a robustness test, resulting in the same uncertainty discussed in Article i. Specifically, an explanatory variable that could have made the regression better is the consideration of other alcohol regulation laws in a country's policy. This weakness was specifically addressed and improved upon in Article i. This paper excludes variables like MLDA and state monopoly on retail, which are shown in the other papers to have a large effect on alcohol consumption in a country. By leaving out these factors, the model may assign the negative effects on alcohol consumption associated with other controls to the effect of ad bans, therefore overestimating how much these bans really reduce alcohol consumption.

Another internal weakness is the fact that alcohol consumption does not have a consistently negative relationship with partial or total ad bans in the regression results. In the regressions where country-specific dummy variables are excluded, the results line up with the author's conclusions, but when these variables are included the results and conclusions contradict one another. Furthermore, the regressions *with* the variables have a higher R-Squared score than those without, implying that these are more accurate and consistent.

This paper shares many of the same external strengths and weaknesses as Article i. The large sample size of surveyed countries allow the results to be extrapolated easily to other countries of similar economy and culture, but the focus on first world countries makes it difficult to extend the results to a truly global scale. Furthermore, this article also does not account for the proliferation of the internet and online advertisements, which results in similar underestimation as Article i.

iii. Nelson, J. P. (2003). Advertising Bans, Monopoly, and Alcohol Demand: Testing for Substitution Effects Using State Panel Data

This paper analyses the importance of restrictive alcohol control policies and regulations in the USA, including advertising bans for billboards, bans on price advertising, state monopoly control of retail stores, and changes in the MLDA. It therefore asks the question of how much these policies decrease total alcohol consumption. Furthermore, by targeting its analysis separately on beer, wine, and spirits, the paper attempts to demonstrate the unforeseen impacts of alcohol regulations caused by substitution effects.

The paper uses observational panel data for its analysis. Alcohol consumption data are from the National Institute on Alcohol Abuse and Alcoholism. Real income data are from the U.S. Bureau of Economic Analysis. Beverage price data are from Young and Bielinska-Kwapisz (2002). Cigarette price data are from *The Tax Burden on Tobacco: Historical Compilation*. State tourism data sourced from the U.S. Bureau of Labour Statistics. Population age and unemployment data sourced from the U.S. Bureau of the Census. MLDA data are from F. Chaloupka, *State Minimum Alcohol Purchase Age Laws* (1988). State monopoly control data are from the Distilled Spirits Council of the United States. Advertising ban data are from the Summary of State Laws and Regulations Relating to Distilled Spirits. Alcohol prices are from quarterly surveys by the American Chamber of Commerce Researchers Association.

The study analyses data in the timeframe of 1982 - 1997, in all states in the U.S. excluding Alaska and Hawaii (missing price data), Nevada (unique significance of tourism), New Hampshire (uniquely aggressive state store marketing), and Utah (unique religious make-up). In total, the sample size is 720 observations.

The data are analyzed in multivariate regression through four parallel models:

$$A_{it} = \alpha + \mathbf{R}_j + \beta_i T_{it} + \gamma P_{it} + \delta C_{it} + \mathbf{X}_{it}\eta + \mathbf{Z}_{it}\psi + \varepsilon_{it},$$

Where subscripts *i* and *t* indicate state and time respectively; *A* is log of per capita alcohol consumption in gallons by people aged 14 and up (in the four different models this is total alcohol, beer, wine, and spirits); α is an intercept term; **R** is a time-invariant regional constant term (a vector of regional dummies with each state assigned to either East, Midwest, South, or

West); T is an exponential time trend for each state; β is a state-specific exogenous growth rate per capita; P is the price of alcohol; C is a cross-price for alcohol or tobacco; $\mathbf{X}$ is a vector of logged state economic and social conditions; $\mathbf{Z}$ is a vector of variables for state laws (MLDAs, retail monopoly control of spirits, ad bans of billboards for spirits, and bans on price advertising for spirits); ϵ is an error term.

The regression models are estimated through GLS estimators. First, alcohol demand is regressed for all states over the timeframe of 1982 - 1997. Second, a regression is run for only the twelve states that issue retail licenses for the sale of spirits (sample size is 528). Third, the original regression is run again with the results broken up into smaller timeframes of 82-88 and 89-97. All results below are statistically significant to the 95% confidence level unless stated otherwise.

In the basic regression, the presence of a spirits billboard ban on has a total positive affect on alcohol consumption of 0.054 gallons. This is broken up into a -0.037 gallon decrease for beer, a 0.170 increase for wine, and a 0.128 increase for spirits. The presence of a ban on price ads for spirits has a negative effect on total alcohol consumption of -0.009 gallons. This is broken up into a 0.028 increase for beer, a -0.083 decrease for wine, and a -0.052 decrease for spirits. Also, MLDAs being one year higher resulted in a decreased total alcohol consumption of -0.020 gallons, and the presence of a state monopoly on retail spirits sales had a total negative effect of -0.047 log gallons.

In the license state-specific regression, the presence of a spirits billboard ban on has a total positive affect on alcohol consumption of 0.023 log gallons (significant at 80% level). This is broken up into a -0.011 decrease for beer (significant at 80% level), a 0.130 increase for wine, and a 0.115 increase for spirits. The presence of a ban on price ads for spirits has a negative effect on total alcohol consumption of -0.008 (significant at 70% level). This is broken up into a -0.019 decrease for beer, a 0.030 increase for wine (significant at 90% level), and a -0.047 decrease for spirits. MLDAs being one year higher resulted in a decreased total alcohol consumption of -0.020 log gallons.

In the time-specific regression, the results largely indicate the same things: the presence of a billboard ad ban had a net positive effect of 0.052 log gallons in 1982-88, and a positive effect

of 0.001 (not statistically significant) in 1989-97. The presence of a price ad ban had a net negative effect of -0.002 (not statistically significant) in 1982-88, and a positive effect of 0.005 (significant at 60% level) in 1989-97. Billboard ad bans consistently had a negative effect on beer demand (-0.053 in 82-88, -0.057 in 89-97), but the other categories had a positive coefficient (as high as 0.240 for wine in 82-88), suggesting the influence of substitution effects.

Overall, these results indicate that advertising bans do not achieve their intended effect. Billboard bans consistently have a *positive* effect on alcohol consumption, and the negative effect of price ad bans are usually negligible. However, a higher MLDA and the implementation of a state monopoly on retail or wholesale sales of spirits are shown to have a consistent impact of decreasing total alcohol consumption. The policy implications of these results are intuitive, and very similar to those of Article i: if policymakers wish to reduce alcohol consumption, they should not devote time and resources to implementing alcohol advertisement bans. Instead, they should focus their efforts on other areas of alcohol control regulations.

An internal strength of this paper is the specific analysis of how consumption of different beverage types are affected by control policies. While a single total alcohol statistic would likely lead to the same conclusions about the effectiveness of control policies, breaking it up into separate categories allows for more nuanced analysis involving substitution effects. A less comprehensive study may have just looked at how a spirits price ad ban affects demand for spirits, but we can see that through substitution effects, such a ban would have the opposite of the intended effect.

Another internal strength is the careful exclusion of certain outlier states, such as Nevada. With Las Vegas alcohol-centric tourism acting as such a central economic force in the state, including it would most certainly throw off the national averages, and not provide a good example of how ad bans affect consumption of alcohol.

An internal weakness of the study is that several of the results are not statistically significant at a high confidence level. Specifically in the time-specific regression, many of the results have t-scores lower than 1, which casts doubt onto the reliability of these results. However, these are not the main source of the paper's conclusions, and the main regressions are much more statistically significant. Furthermore, another internal weakness is that there is no

robustness test to ensure the validity of the study's quantitative methods. Though it is uncertain whether this would result in an over- or under-estimation bias, this can still be considered a fault in the paper's framework.

An external strength of this paper is the comprehensiveness of accounting for regional differences in states; by assigning different states dummy variables according to their region, the paper is able to filter out much of the variation that exists between different state cultures that may affect how much they normally drink alcohol. This makes the paper somewhat better suited for application to other populations.

An external weakness of this paper is the limited geographic scope. Since the study only looked at data from the United States, it encounters a more severe issue with extrapolation as did the other two articles. Although the study did account for regional differences, it still stands that the USA is significantly more developed and wealthy than most other countries. For this reason, it is uncertain whether that these results would apply to, for example, a more consistently metropolitan country such as Japan, where advertisements or the lack thereof would hypothetically have a much larger effect on the population. Therefore, this paper may underestimate the effects of an ad ban if applied in this situation.

Additionally, similar to Articles i and ii, the paper also suffers from the external weakness of not accounting for online advertisements.

III. Conclusions

In the articles of this critical review, the effectiveness of bans on alcoholic beverage advertisements was assessed through three different observational analyses. In Saffer & Dave's "Alcohol Consumption and Alcohol Advertising Bans", data from a series of European countries were examined in order to investigate the two-way relationship between alcohol consumption and alcohol ad ban legislation. The resulting regression showed some evidence that both partial and total ad bans on alcohol products had a negative effect on the national amount of alcohol consumed in a given country. Therefore, the paper concluded that advertising bans did in fact reduce national alcohol consumption. Additionally the paper concluded that higher alcohol consumption, along with a higher overall government involvement in a country's economy, is likely to result in that country enacting an advertisement ban for alcoholic beverages.

Nelson's "Alcohol Advertising Bans, Consumption and Control Policies in Seventeen OECD Countries, 1975-2000" built upon the observational framework set by Saffer and Dave, but refined the quantitative techniques by accounting for national alcohol control policies apart from advertising regulations. Through an inclusion a control index variable, encompassing legislation like minimum legal drinking age and blood alcohol content limits, this paper was able to further isolate the impacts of alcohol ad bans and assess how effective they are in relation to other laws. Ultimately, the regression results showed that instead of lowering national alcohol consumption, alcohol ad bans have a consistent effect of marginally *raising* national alcohol consumption. Furthermore, the other control policies were shown to have a consistently negative effect on national alcohol consumption, and the paper concluded that these are much more effective than ad bans.

Nelson's "Advertising Bans, Monopoly, and Alcohol Demand: Testing for Substitution Effects Using State Panel Data" used a similar approach to the previous article, but rather than observing a series of countries it focused solely on the United States. The study analyzes data from 45 states and accounts for state-specific alcohol regulations such as government monopoly on retail sales and minimum legal drinking ages. Through this framework, this study is able to isolate for the effects of advertisement bans on alcohol demand in relation to these other control policies. The study makes distinctions in its analysis between different kinds of alcohol (beer,

wine, and spirits) and different kinds of ad bans (price advertisements and billboard advertisements), which allows for the examination of substitution effects between different kinds of alcohol in response to control policies. The paper's regression results show that both types of advertisement bans have either a positive net effect on total alcohol consumption, or a negligibly small negative effect. At the same time, the results indicate a consistent negative relationship between the other control policies and the net total consumption of alcohol. The paper therefore makes a similar conclusion to Article i., that is, advertisement bans are an ineffective mode of regulating the consumption of alcohol, and that other control policies do a much better job of achieving their intended effect.

Altogether, the results of these three studies seem to unambiguously answer the research question stated in Section I. No, advertisement bans are not an effective way to regulate the consumption of alcohol. Although Saffer & Dave's study came to a conclusion contrary to this, the other two papers did a good job of demonstrating the faults in their analytical framework, most notably their failure to account for any national alcohol control policies other than advertisement restrictions. To further illustrate this point, Article i. runs a regression without these control policies to replicate Saffer & Dave's results and show how their paper could be made better with the inclusion of additional explanatory variables. Overall, the more comprehensive studies come to the same conclusion, that ad bans do not decrease people's consumption of alcohol, and that other control policies are consistently much more effective at doing what ad bans are supposed to do.

In the future, studies much like these can still provide useful information on the topic of ad bans for alcohol. None of the three papers in this review account for online advertisements whatsoever, causing them all to become increasingly outdated by a modern standard. As mentioned in the analysis for Article i., the internet has made a huge impact on the landscape of marketing, and as it becomes ever more ubiquitous, opportunities for alcohol advertisements grow as well. Without further study, legislators cannot be certain that people will respond to online alcohol ads in the same way that they respond to broadcast, print, or billboard ads. By extension, they also cannot be certain that people would respond to an online ad *ban* in the same way that they respond to a ban in these other forms of media.

IV. References

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